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DERWENT-WEEK: 200442

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TITLE: Digital controller for electric motors, has
                microcontroller programmed to control
operations of
                controller, and transient and surge protection
circuit to
                suppress voltage spikes and unexpected current
surges

INVENTOR: CHUA, J C; DALUMPINES, R B ; DE LEON, H L
; RISSO, A F

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ABSTRACTED-PUB-NO: WO2003096523A

BASIC-ABSTRACT:

NOVELTY - The **controller** has a microcontroller (80) programmed to control
operations of the apparatus. Voltage and current zero cross **detectors** (50, 98)
are provided to detect AC supply voltage and zero crossings of load current. A
transient and **surge protection** circuit (4) suppresses voltage spikes and
unexpected current surges. An over current **detector** (30) coupled in series
with a load senses the current flowing through the load.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(a) a method of reducing the energy consumption of single-phase AC induction
motors

(b) a method of switching off the electrical load

(c) a method of controlling the sudden inrush of current to the motor load

(d) a method of delaying the application of power to the load

(e) a method of allowing operation from 110 volts to 230 volts AC.

USE - Used for controlling energy consumption of low power single- phase AC
motors and for conditioning power of household appliances.

ADVANTAGE - The microcontroller chip is a single low cost device that
automatically adjusts the voltage applied to the motor based on a power factor
or a phase angle between a voltage and a current, thereby saving the energy
consumption. The controller performs power-on delay functions so as to prevent
damage to the load during power interruptions, and auto-voltage operations to
allow operations over a wide range of voltages. The transient and surge
protection circuit suppresses the voltage spikes and the unexpected surges in
the current, thereby protecting the load.

DESCRIPTION OF DRAWING(S) - The drawing shows a block diagram of the digital
controller apparatus.

Transient and surge protection circuit 4

Over current detector 30

Load 46

Voltage zero cross detector 50

Microcontroller 80

Current zero cross detector 98

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Basic Abstract Text - ABTX (1):
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AC Input 2

Transient & Surge Protection 4

Over Current Detector 30

Auto Volt Power Supply 8

Load 48

Transient Protection 26

Voltage Zero Cross Detector 50

Over/Under Voltage Detector 66

Microcontroller Chip 80

Current Zero Cross Detector 98

Switching Circuit 114

LED Bar Graph Display 122

Piezo Buzzer 216

Over/Under Voltage Indicator 230

Push Button Switch 222